Supporting NEPA

Sustainable Range Planning Too

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7 April 2004

Supporting The NEPA Process: Outline

- Sustainable Range Planning
- Range Sustainability Risk
- Range Risk Design Tool
- NEPA Connection
- Future Potential

Sustainable Range Planning: Background

- Mission Focus: Training soldiers
- “Encroachment”
- Sustainability
- Range Manager’s Priorities
- R&D: Risk Tool: Purpose

Range Sustainability Risk

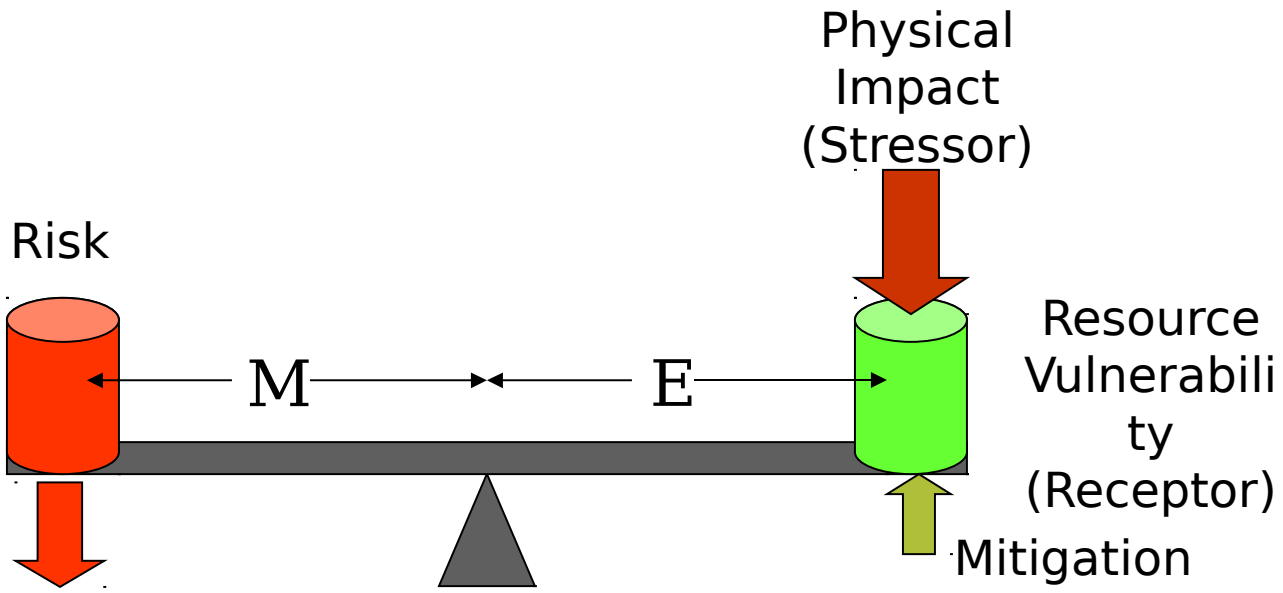
- Training activity impact
- Resource degradation
- Training value degradation
- Maintenance costs
- Legal/regulatory constrain
- Range Closure
- Range Cleanup

Range Risk Tool Design

- Purpose
  - Assessment of sustainability risk
  - Proposed range, specific location
  - Used by installation staff
  - Supports decision-making
- Method
  - Artificial Intelligence
  - Knowledge-based
  - Interactive
  - Mission focus

Sustainability Risk Paradigm

Risk Equilibrium Analog



M = Installation environmental management capacity
E = Externalities (community and other stakeholders)

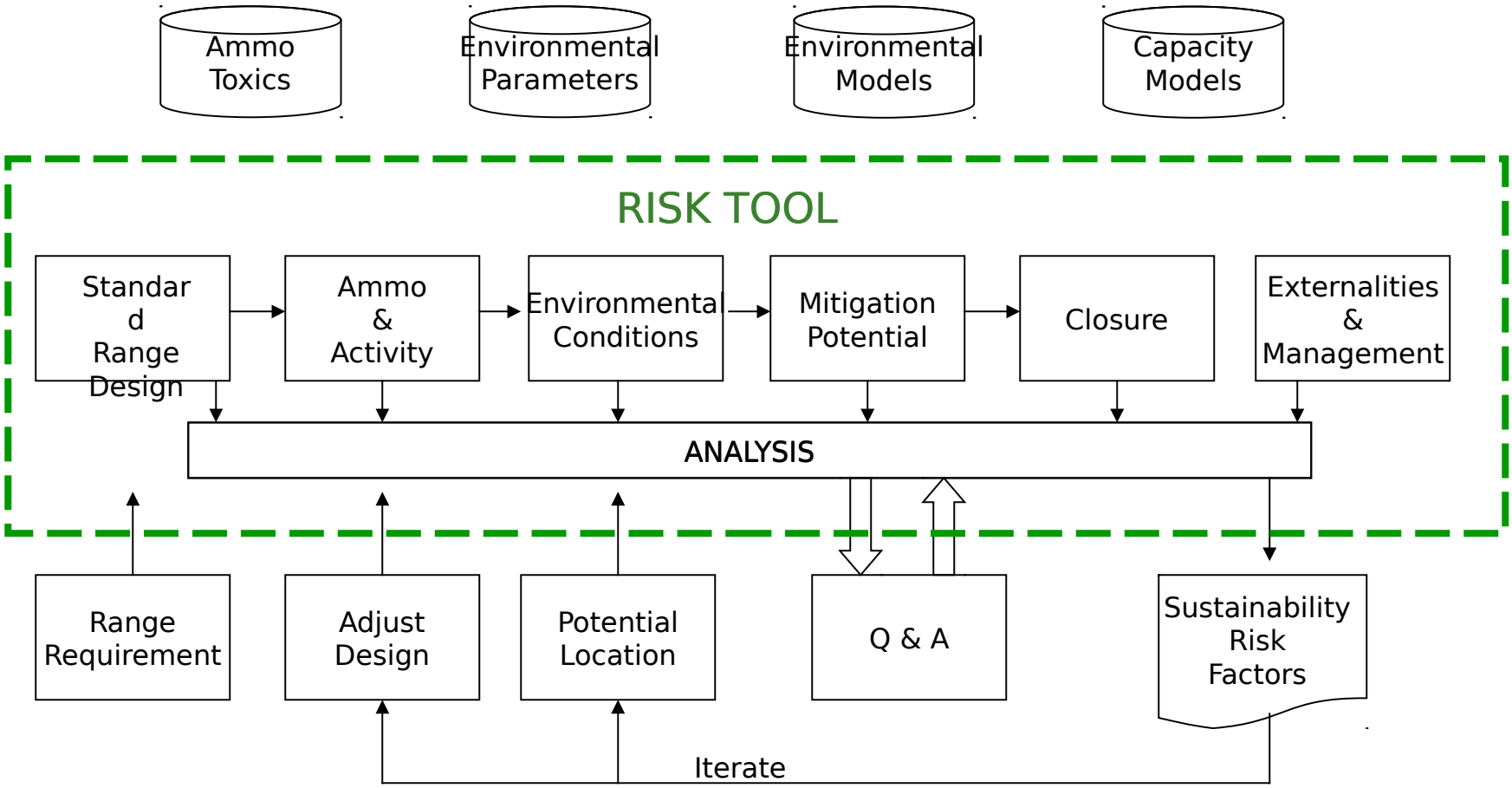
Risk Parameters

- Stressor (Range activity)
- Receptor (Environmental resources)
- Mitigation
- Management
- Externalities
- Resource significance

Range Risk Tool

- Matching stressor and receptor
- Quantitative
- Input mix:
  - Data Bases
  - Local Expertise
- Reports

EXTERNAL DATA AND MODELS



INSTALLATION

Inference Engine

		A. Land Use and Traffic patterns	B. Air Quality	C. Noise	D. Water Quality	E. Wetlands	F. Water Body Mod	G. Floodplain	H. Coastal Zone	I. Wildlife & Vegetation	J. TES	K. Socioeconomic and Long-term Productivity	L. Pollutants (HM,HW)	M. Visual Effects	N. Archaeologic, Historic, and American Indian (or NA: NH)	O. Energy Use	Physical Impact	Management and Externalities		Cumulative	
1	**Construction**	0.957	0.971	0.978	0.978	0.987	0.972	1.000	1.000	0.963	0.966	0.957	0.974	0.963	0.972	0.978	0.676				
	a. Clearing	0.975	1.000	1.000	0.996	0.994	0.987	1.000	1.000	0.983	0.984	0.980	1.000	0.983	0.987	1.000	0.876	1.940		0.774	
	b. Horiz Construction	0.937	0.943	0.957	0.960	0.981	0.957	1.000	1.000	0.943	0.948	0.934	0.948	0.943	0.957	0.956	0.520	1.940		0.281	
	c. Vertical Construction	0.959	0.971	0.978	0.978	0.988	0.972	1.000	1.000	0.963	0.966	0.957	0.974	0.963	0.972	0.978	0.679	1.940		0.471	
2	**Operations & Maintenance**	0.964	0.977	0.983	0.980	0.989	0.974	1.000	1.000	0.966	0.969	0.964	0.980	0.968	0.976	0.984	0.719				
	a. Ammunition	0.948	0.957	0.968	0.965	0.984	0.964	1.000	1.000	0.953	0.957	0.946	0.955	0.953	0.964	0.967	0.588	1.940		0.357	
	b. Unit Activity*	0.959	0.971	0.978	0.974	0.986	0.968	1.000	1.000	0.958	0.962	0.969	0.987	0.973	0.979	0.989	0.702	1.940		0.504	
	c. Equipment (unit)	0.964	0.978	0.984	0.982	0.989	0.976	1.000	1.000	0.968	0.971	0.963	0.981	0.968	0.976	0.984	0.725	1.940		0.536	
	d. Wastes	0.970	0.986	0.989	0.987	0.991	0.979	1.000	1.000	0.973	0.975	0.969	0.987	0.973	0.979	0.989	0.774	1.940		0.608	
	e. Maintenance	0.970	0.986	0.989	0.987	0.991	0.979	1.000	1.000	0.973	0.975	0.969	0.987	0.973	0.979	0.989	0.774	1.940		0.608	
	f. Targets	0.970	0.986	0.989	0.987	0.991	0.979	1.000	1.000	0.973	0.975	0.969	0.987	0.973	0.979	0.989	0.774	1.940		0.608	
3	**Closure**	0.945	0.971	0.978	0.966	0.983	0.970	1.000	1.000	0.950	0.955	0.943	0.956	0.960	0.962	0.967	0.605				
	a. Dormancy	0.948	0.971	0.978	0.965	0.984	0.972	1.000	1.000	0.953	0.957	0.946	0.955	0.963	0.964	0.967	0.614	1.940		0.389	
	b. Clearing	0.943	0.971	0.978	0.965	0.982	0.968	1.000	1.000	0.948	0.953	0.940	0.955	0.958	0.960	0.967	0.592	1.940		0.362	
	c. Cleanup	0.943	0.971	0.978	0.965	0.982	0.968	1.000	1.000	0.948	0.953	0.940	0.955	0.958	0.960	0.967	0.592	1.940		0.362	
	d. Re-use	0.948	0.971	0.978	0.969	0.984	0.972	1.000	1.000	0.953	0.957	0.946	0.961	0.963	0.964	0.967	0.621	1.940		0.397	
	Cumulative	0.872	0.921	0.941	0.926	0.960	0.918	1.000	1.000	0.883	0.894	0.870	0.913	0.895	0.913	0.931	0.665				
	Score with significance	0.934	0.921	0.912	0.962	0.960	0.958	1.000	1.000	0.883	0.894	0.811	0.913	0.946	0.913	0.931	0.928			0.865	Total Scor

Useful for operational alternative analyses/mitigations

A New Range: the Process

- Range Requirement
- Range MILCON Process
- Range design
- NEPA Analysis
- Construction
- Monitoring - mitigation

Intent of NEPA

- Decision-support
- Interdisciplinary
- Analytical
- Place-based
- Environment focused
- Mission-oriented

Risk Tool

NEPA Decision Process

- MDMP Analog
  - Staff estimate
  - Alternatives
  - Recommendations
  - Support the decision
- Avoid “going black” with environmental resources
- Early in the process

Value of the Tool to NEPA

- Identify issues
- Scoping
- Planning tool
  - Alternative identification
  - Analysis
- Initiates data collection
- Assists with [data → information] process
- NEPA intent w/o “NEPA” process

Range Risk Analysis

- Benefits
  - Fast, low-cost analysis
  - Introduces environmental considerations early
  - Interactive: aids analysis and decision-making
- Future Potential
  - GIS integration
  - Expert Systems
  - Fuzzy Logic

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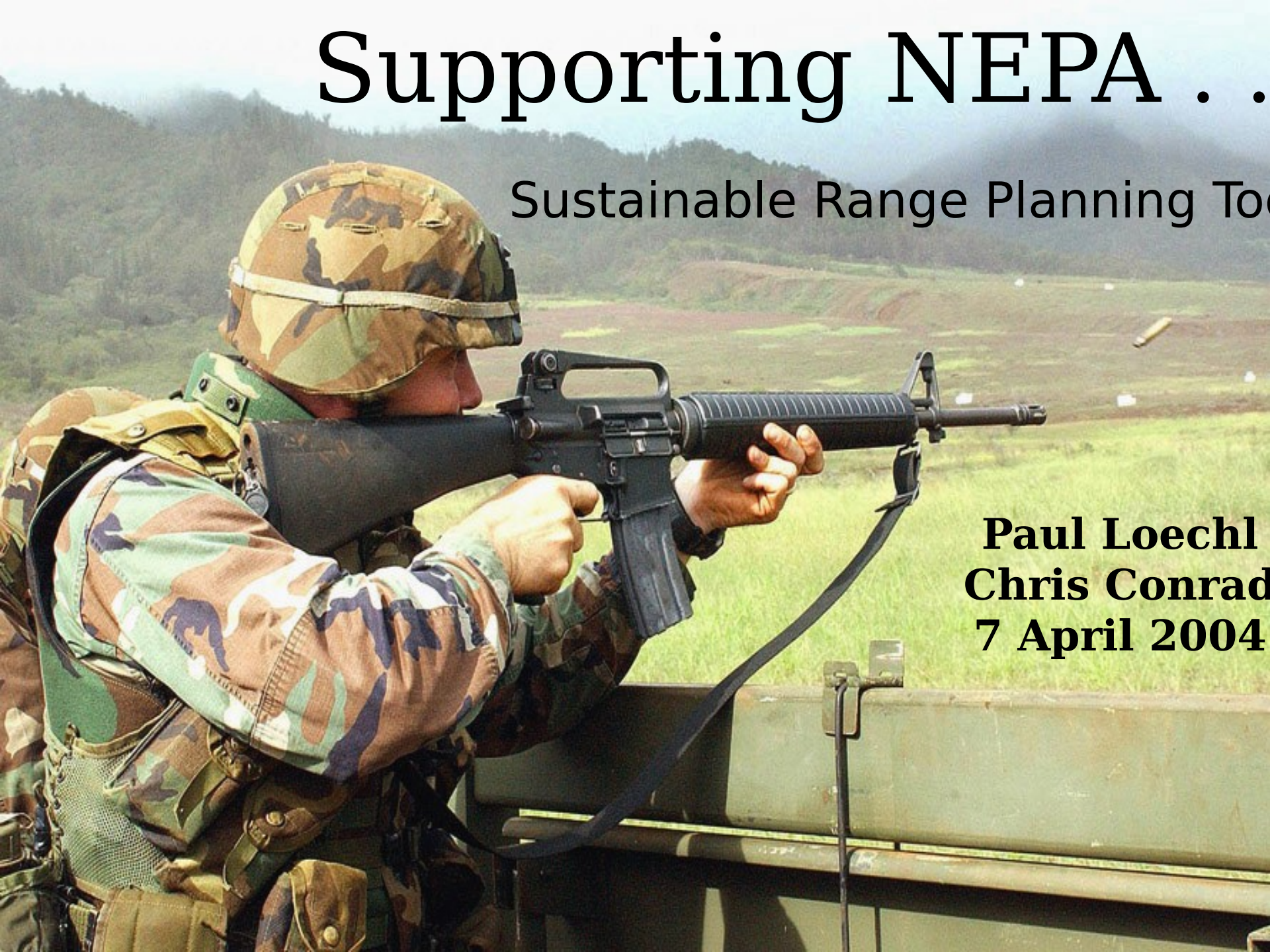

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